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NEWS LETTER

BUREAU OF PLANT QUARANTINE

UNITED STATES DEPARTMENT OF AGRICULTURE

Number 39 (NOT FOR PUBLICATION) March 1, 1934.

(The contents of this number, unless specifically stated otherwise, cover the month of January only)

FOREIGN PLANT QUARANTINES

RECENT ENTOMOLOGICAL INTERCEPTIONS OF INTEREST

Mediterranean fruit fly from the Azores.--Four living larvae of *Ceratitis capitata* Wied. were intercepted at New York in an orange in baggage from the Azores. Besides orange, this trypetid has been taken previously in apple, guava, loquat, peach, pear, pepper, *Sorbus* sp., and sweet lime from the Azores.

Aphid from Japan.--Living specimens of *Capitophorus formosanus* Takahashi were intercepted at Seattle, Wash., on the leaves of chrysanthemum plants in ship's quarters from Japan. P. W. Mason, of the Bureau of Entomology, reports that this aphid is not known to occur in the continental United States.

Thrips from the Netherlands.--*Thrips physapus* L. was intercepted at Boston on an endive leaf in stores from the Netherlands. J. R. Watson, of Gainesville, Fla., reports on this species as follows: "It is a common European thrips which also occurs in northern parts of the United States and Canada."

Metallic wood borer in Puerto Rico.--Adults of *Neotrachys hoffmani* Fisher (Buprestidae) were collected on betel palm (*Areca catechu*) in the field at Adjuntas, P.R. W. S. Fisher, of the Bureau of Entomology, reports that this species was known previously from the type only.

Coccid from Spitzbergen.--*Orthezia cataphracta* Shaw was taken at Washington, D.C., with a plant of *Allosorus crispus* in the mail from Spitzbergen.

Mahogany logs infested.--Two larvae and an adult of *Oedopeza pogonocheroides* Serv. (Cerambycidae) were intercepted at New Orleans in mahogany logs in cargo from Mexico. W. S. Fisher reports that this long-horned beetle is not recorded from the continental United States.

Aphid on orchid plants.--*Macrosiphum lutea* (Buckton) was intercepted at Washington, D.C., on orchid plants in the express from England. P. W. Mason remarks that this species is known only from Orchidaceae under glass in England and Brussels.

Form of onion thrips from Europe.--Living specimens of *Thrips tabaci* forma *atricornis* Pr. were intercepted at Philadelphia on leeks in ship's stores from the Netherlands and on hardy chrysanthemum and aster in the mail from Great Britain, and at Boston on a leaf of Jerusalem artichoke in stores from France. J. R. Watson states that this is the dark, European, winter form of the common onion thrips.

Scale insects on bromeliads.--*Chrysomphalus personatus* Comst. and *Gymnaspis aechmeae* Newst. (Coccidae) were taken at Washington, D.C., on several species of bromeliads in the express from Bruges, Belgium.

Brussels sprouts infested.--A living larva of *Psylliodes chrysocephala* L. (Chrysomelidae) was intercepted at Philadelphia in brussels sprouts (*Brassica oleracea gemmifera*) in stores from Denmark. This represents the first interception by inspectors of the Bureau of Plant Quarantine of this chrysomelid in brussels sprouts.

Leaf beetle from Nicaragua.--Adults of *Ogdoecosta catenulata* Boh. (Chrysomelidae) were taken at Mobile, Ala., on bananas in cargo from Nicaragua.

RECENT PATHOLOGICAL INTERCEPTIONS OF INTEREST

Nectarine rust.--Our first interception of *Tranzschelia punctata* (*Puccinia pruni-spinosa*) on fruit was made at New York on January 24 on a nectarine from Chile. Only one spot was producing mature spores. The infected spots were doubtless minute and inconspicuous at the time the fruit was packed. While this rust is more or less generally distributed we have had only two previous interceptions, one on a leaf with a shipment of peaches from Chile in 1922 also at New York, and one on a plum stock from France in 1925 at Philadelphia.

Aspidistra leaf spot.--A leaf spot on *Aspidistra lurida* from Japan intercepted at Seattle on January 10 was found to be caused by *Cylindrosporium* sp. Miss E. K. Cash states that no species of this genus has been reported on *Aspidistra*

Aucuba disease.--The disease on a leaf of *Aucuba japonica* from Japan intercepted at Seattle was tentatively determined as due to *Macrophoma aucubana*. There were no specimens in the herbarium with which to compare this material.

Fungus in banana debris.--A fungus on a leaf in banana debris from Guatemala collected at Baltimore on October 30 proved to be of interest to mycologists. Miss Cash determined it as *Coscinaria* sp., and states that this genus is supposed by some to be a synonym of *Oomyces* but according to others is more closely related to *Hypocrella*.

Orchid roots infested.--The cattleya midge (*Parallelodiplosis cattleyae* Moll.) was intercepted at Honolulu, Hawaii, on the roots of *Cattleya warscewiczi* in the express from England.

Nut fruit tortrix from Europe.--*Laspeyresia splendana* Hbn. (Olethreutidae) was intercepted at San Francisco in chestnuts in cargo from France and in the same host in the mail from Switzerland.

New host and locality records.--*Parthenothrips dracaenae* (Heeger) was intercepted at Laredo, Tex., on a leaf of *Lasiacis ruscifolia* in baggage from Mexico. J. R. Watson reports as follows concerning this species: "This is a new host for this thrips and I have no record of it having been reported from Mexico before, although it has been reported from California. It is most common on castor bean."

Fungi intercepted.--Among the interesting and unusual interceptions of fungi for which determinations were made or received during the month were *Colletotrichum agaves* on leaves of a frozen agave plant being imported through Philadelphia from Cuba under special permit; *Fusicicoccum castaneum* on *Castanea* sp. (*C. mollisima* ?) from China collected at the inspection house, Washington, D.C.; *Gloeodes pomigena* and *Leptothyrium pomi* on apples collected January 24 at New York, our first interception of these diseases from Yugoslavia; *Papulospora* sp. on carrot from Norway on January 1 at Charleston; *Phycomyces nitens* on wood and bark waste in hold, source unknown, at Seattle May 4 last, determination just received from specialists; *Puccinia anomala* on barley straw from Japan intercepted at Baltimore on December 8; and a rust on garlic from Brazil collected at Baltimore on December 7 and referred to J. C. Arthur, noted rust specialist, by the specialists in the Bureau of Plant Industry since it appears to have some characters of both *Puccinia porri* and *P. alli*.

Parasitic nemas intercepted.--Interceptions of parasitic nemas for which determinations were received during the month included *Anguillulina dipsaci* in potatoes from Germany at Port Arthur, from Denmark at Philadelphia, from Sweden at Boston and New Orleans, and from Norway at Philadelphia; *Aphelenchoides parietinus* in ginger and kudzu from China at Boston and in lily-of-the-valley pips from Germany at New York; *Aphelenchus avenae* in garlic from Hungary (first interception from this country) at Philadelphia taken on December 21; *Heterodera marioni* in beets from Mexico at El Paso, in potato from Italy and in yam from Japan at Philadelphia, in clematis from Holland and England (2), in rose from Spain, in *Sophora viciifolia* and *Antennaria dioica tomentosa* (new host) from England at the Washington inspection house.

NEW SPECIES OF NEMA FOUND ON YAM

Diseased yams (*Dioscorea batatas*) from Japan intercepted at Philadelphia on January 31 were found to be infested with an interesting collection of nemas. Dr. Steiner reports as follows: "A new species of *Paraphelenchus* most numerous, causing brown streaks through the tissues. A few *Aphelenchoides* (*Scinura*) *tenuicaudatus*, *Aphelenchoides*, *Diplogaster* sp., *Rhabditis* sp."

PHILADELPHIA AGAIN FINDS RARE NEMA ON YAM

On January 18 a diseased yam was intercepted in baggage from Puerto Rico at Philadelphia. An unusual looking parasitic nematode was found in the diseased tissue and referred to Dr. Steiner who identified it as *Hoplolaimus bradys* Steiner and LeHew. This species is based on material from the same host taken at

Philadelphia in baggage from Jamaica on August 6, 1931. (See News Letter for October, 1931, p. 5.) This species has never been reported except for these two interceptions.

FOREIGN SHIPPER HEEDLESS OF REGULATIONS

The following letter sent to W. W. Wood, plant quarantine inspector at Detroit, Mich., illustrates a quarantine difficulty common enough in connection with foreign shipments, and one of the few types which no one tries to blame on the quarantine officials: "I just received the empty package from China from which the bulbs had been destroyed. I want to explain to you that these bulbs were sent in spite of at least three statements to my friend there that at any time he got hold of any bulbs for me that he must notify me so that I could apply to Washington for a permit to import. He has disregarded my instructions and rightfully enough the bulbs have been destroyed. The people at Washington have been so very good to me in granting my every request for permission to import, that I sincerely regret this Chinese boy has apparently tried to beat the game by failing to carry out my instructions. I shall send your notice to him. It will probably properly impress him."

FRUIT FLY SURVIVES LONG TRIP

The inspection staff at the port of Baltimore reports an interesting case of persistence of larvae of the Mediterranean fruit fly in fruit, as follows: "The British merchant vessel Leighton sailing from Bahia, Brazil, via New York for Baltimore, arrived in this port December 11, 1933. The inspection of ship's stores disclosed eleven Brazilian oranges in a bushel basket of American apples in the chill room. The steward insisted at first he be allowed to keep and use this fruit at once, but finally agreed to their destruction; they were then seized and brought into the office for examination. The finding of two live larvae in one orange after it had been on the vessel between three and four weeks, under unnatural conditions, makes this case all the more interesting and confirms our belief in the necessity of destroying small quantities and sealing larger quantities of fruit while the vessel is in port."

CAR STOWAWAYS CAUSE ANXIETY IN FUMIGATION

The following letter, sent to all Mexican border ports where fumigation is provided, deals with a problem which is always a source of deep anxiety to everyone concerned with the fumigation of railway cars on the Mexican border: "An incident recently happened at Nogales, Ariz., which illustrates the necessity of making a close inspection of the interior of all freight cars before they are placed in the fumigation house. Mr. Bellis reported that on January 19 an empty box car crossed from Mexico and was taken to the fumigation house. An inspection of the car just before it was placed in the house revealed a Mexican boy hiding in one of the corners. The boy was turned over to the Immigration authorities who returned him to Mexico. Had the inspector on duty at the fumigation house been a little lax in his examination of cars the boy would undoubtedly have entered the fumigation house and been killed. I wish that you would call this incident to the attention of the inspectors responsible for the fumigation of cars and see that all the instructions with reference to the examination of cars before they are placed in the house are strictly adhered to."

1933 LIST OF INTERCEPTED PLANT PESTS

The list of plant pests intercepted during the fiscal year 1933 was distributed in January. Attention is called to the grand total of 17,232 interceptions as given on page 64. This figure is not comparable to the grand total of 12,183 given on page 244 of the list for 1932 since that figure did not include the 3,863 common insects and 2,923 common diseases intercepted and listed on pages 175 and 176. The addition of these figures makes the 1932 total 18,969 as compared with 17,232 for 1933. However, the number of lots of material sent in showed an increase in 1933. These figures are shown in the annual report of the Chief of the Bureau for 1932 in the text and table 40 on page 60, and for 1933 in the text on page 62 and table 39 on page 63, the total for 1932 being 17,354, and for 1933, 21,190.

A segregation of the figures given in these tables shows that maritime and Mexican border ports exclusive of those in California and Florida furnished 10,951 lots of material in 1932 and 15,450 lots in 1933, while the interceptions from California and Florida were 6,403 in 1932 and 5,740 in 1933. In this connection it should be noted that California and Florida determine almost all of their own interceptions and the figures given are for different determinations, several of which may be from one lot of material. Other ports refer a large part of their material to Washington, some lots containing several pests, others having none that are in a condition to determine. The increase in material from maritime and border ports was largely due to the increases in interceptions on Mexican produce on the border. A continuation of this work on the border will give a vastly improved picture of conditions there.

In addition to the interceptions of foreign material the Washington office handles material or records of material collected locally at the ports and by field inspectors of the Division of Domestic Plant Quarantines as well as Foreign Plant Quarantines. The grand total of material from all sources was 24,999 for 1932 and 25,581 for 1933.

AIRPLANE INSPECTION AT BROWNSVILLE, TEX.

Since the port of Brownsville, Tex., is the northern terminus of the Pan American Airways, which operates air lines throughout Mexico and the South American countries, regular daily inspection of airplanes at this port is necessary. The field here is an excellent one, rated A-1-A by the United States Department of Commerce, and most of the planes coming from these countries enter the United States at this port.

The planes of the Pan American Airways arrive for the most part at a regular time each day. These planes are large tri-motored planes and bring, in addition to passengers, mail and express.

As soon as the plane has landed, taxied up to its landing mark, and discharged its passengers, mail, express, etc., it is boarded by inspectors of the Public Health Service, the Customs, and the Department of Agriculture. The plane is thoroughly inspected by the inspector of the Department of Agriculture for any fruits, plants, or other material of this nature which may have been left in the plane by the passengers or members of the crew. All prohibited material found by the inspector is taken to the fumigation house, and is destroyed by fire in an incinerator specially constructed for that purpose.

After the inspection of the plane has been completed, the baggage of all passengers and crew of the plane is inspected simultaneously by the inspector of Customs and the inspector of the Department of Agriculture. This is done after all passengers and crew have been examined by the Public Health Service and the Immigration Service.

The next step in the procedure is the inspection of packages arriving by mail. This is done in the air mail field office maintained at the airport by the Post Office Department. All packages are examined at the same time by the inspector of Customs and the inspector of the Department of Agriculture for dutiable or contraband material. Any package found to contain material which is prohibited entry by the Department of Agriculture is either returned to the sender, or the offending material is removed and a special form is filled out and placed in the package indicating to the addressee the reason for its removal. Most of the contraband thus removed from packages is material such as seed cotton or parts of plants used for packing. However, in some cases the contents of the package may consist entirely of fruits or plants or even live insects. In such cases the whole package is returned to the sender. In one instance a package containing cotton samples was examined and found to contain a larva of the pink bollworm.

In addition to the planes of the transportation company which usually arrive on schedule, many private planes are inspected. These planes have no schedule and may arrive at any time of the day and even after dark. They are inspected in the same way as those of the transportation company. The average number of planes arriving per month is about 40, though during some months there may be fewer and sometimes more. At times there may be as many as 50 or more.

All pilots are required by the Customs to notify them of the approximate time that they expect to arrive in the United States. This is usually done by radio to the officials of the Pan American Airways, who in turn notify each of the four departments concerned in airplane inspection. Only in case of emergency does a plane enter the United States without landing at the first port of entry, which for this section is Brownsville, Tex. Such an emergency did exist, however, immediately following the devastating hurricane of the past summer. The airport was for a number of days several feet under water, which condition made it impossible to land a plane. All air traffic during this period proceeded to Corpus Christi, Tex., where inspection took place.

The attitude of the transportation company toward our work is one of cooperation and helpfulness. They aid us in every way to carry out our work as swiftly and as efficiently as possible. In the majority of cases the passengers seem to accept our work as necessary, and turn over to the inspector any prohibited material they may have. This in most cases is done readily, if not willingly. Only rarely does a passenger "raise the roof" when asked to give up prohibited material.

DOMESTIC PLANT QUARANTINES

TRANSIT INSPECTION

Freight movement is given special attention at this season of the year when shipments of nursery stock and other restricted articles are likely to be made in car lots. At Alexandria, Va., New Haven, Conn., and Philadelphia, Pa., freight shipments are being checked by Japanese beetle inspectors for compliance with regulations of that quarantine. At Potomac Yards, in the vicinity of Washington, arrangements have been made with the agents to provide this office with copies of waybills covering shipments of any restricted articles from regulated areas to the north. At Cleveland and Detroit, inspectors engaged on the European corn borer project are arranging to make inspections of freight and express shipments in connection with their work. At Chicago the canvass of the railroads has been completed and the purpose of transit inspection was explained to agents, assistant foremen, and other employees. Representatives of three such railroads, noting an almost complete change of personnel since former instructions were sent out, reissued instructions requesting the force to cooperate in the work. Chicago officials of 61 motor express companies and 12 cold storage plants arranged to provide inspectors with bills of lading covering plant shipments.

Apparent violations which have been found in freight since the beginning of the year and reported to project leaders for investigation, consist of 1 carload of sand at Alexandria, 2 granite shipments at New Haven, 1 granite shipment at Boston, and 1 narcissus bulb shipment at Chicago.

White pine boughs visibly infected with blister rust were found in a shipment of Christmas trees by transit inspectors at Boston, and were removed from the bundle and destroyed.

Transit inspection is being resumed at Kansas City on February 28 and at Omaha on March 5, for the period of the spring nursery-stock shipping.

WHITE-PINE BLISTER RUST

The inspection of the nurseries and environs of concerns who are growing, or who contemplate growing, five-leafed pines in Ribes-free zones will be started, it is expected, during late February or early March and continue until the middle or last of June.

For the protection of the Conley State Forest Nursery at Greenbottom, W.Va., the State Commissioner of Agriculture recently established quarantine zones in which the planting or possession of currant and gooseberry plants is prohibited. This nursery was formerly located in Pocahontas County on the eastern boundary of West Virginia, but owing to the limited supply of water in this location, the nursery was moved in recent years to its present location in Cabell County on the Ohio River, from which water is supplied by pumping.

PHONY PEACH DISEASE

Since the inspection of nursery stock for peach borers is practically completed in Texas, Federal cooperation with the work is being discontinued at the close of February.

A marked increase in the demand for peach nursery stock, and a definite shortage of such stock in southern nurseries, have been noted by Bureau inspectors on the phony peach disease work. The demand is believed to be due in part to the more optimistic attitude regarding business conditions. A large percentage of the orders for commercial plantings, it is reported, are coming from the peach-growing area of Fort Valley, Gray, and Thomaston, Ga., one of the areas where the Department is aiding in the suppression of the phony peach disease.

DATE SCALE ERADICATION

During the month of January inspection was carried on both in the infested area and in the districts adjoining. No scale was found. In the infested area the palms were inspected from ladders and from the ground; in the adjoining areas, from the ground only.

Inspection and scouting for unlisted palms was carried on in the Imperial Valley. No scale was found and no unlisted palms were found except those planted since the last check-up.

In Arizona inspection of ornamental palms in the city of Phoenix was carried on and no scale found. Two thousand one hundred palms were inspected in and near the city of Yuma. There are several seedling jungles and many bushy individual palms in this locality which make inspection difficult and uncertain. Infestations in such plantings may develop to be centers of spread before located. It is planned to do considerable pruning and digging here as soon as possible.

JAPANESE BEETLE, MOTHS, AND EUROPEAN CORN BORER

Japanese Beetle Activities

Methods of certifying various classes of shipments under the Japanese beetle quarantine were revised early in January. Certificates to accompany individual containers, less-than-carload shipments, and carload consignments were further reduced to three types. Printed "A" certificates, serially numbered, still remain the type of certificate issued in quantities to uninfested establishments conforming to the safeguards prescribed by the classification requirements of the regulations. One of these certificates must be attached to each individual container of consignments consisting of from a single package to a less-than-carload lot. Users of this type of certificate are not required to report full details concerning the use of each certificate, but report at the end of each month the number of shipments made and the number of certificates used, separated as to the respective State of destination. A certificate legibly impressed with a rubber stamp on each individual package or other container is now the type of certificate used on packages of quarantined articles shipped via parcel post, express, or freight, by classified, infested establishments or by unclassified firms or individuals. Where practicable, this type of certificate is stamped by the inspector on the address label or tag. If blank space is not available on the address label or tag, the certificate is stamped in a conspicuous spot on the carton or container. If neither the address tag nor the container of the inspected articles is available when the inspection is made, the inspector stamps the required number of certificates on blank tags which the Bureau provides for the purpose, and gives the certificate tags to the shipper for affixing to the packages. After stamping each certificate, the inspector inserts the name or serial number of the shipper after the words "Issued to", and inserts the destination in the space provided therefor. A changeable date stamp is set to correspond with the current date on which the shipment is certified. The user of this type of certificate is required to furnish, concerning each shipment certified in this manner, information required on "Report of Shipment" blanks, which are furnished in pad form. Numbered "B" certificates are issued to all shippers in the case of certified carload lots of quarantined articles moving via freight or express, transportation of certified commodities via truck or other road vehicle, shipments of certified articles moving between classified dealers within the regulated area, and lot shipments moving via freight when supplemented with a numbered "A" certificate attached to one of the containers. When the original "B" certificate is executed, a carbon copy is made and returned for recording to the nearest project suboffice. Numbered "P" permits continue in use to cover the intra-area movement of restricted articles by truck or other road vehicle from a regulated area through a nonregulated area to another regulated zone. This revision further simplifies the certificate routine and adapts Japanese beetle certification practices to those found most practicable in jointly certifying articles under quarantines 45 and 48.

Dirt floors in greenhouses subject to Japanese beetle infestation must be fumigated with carbon disulphide preliminary to placing the houses in a certified condition. Applying the fumigant beneath greenhouse benches is usually an inconvenient process. In an effort to eliminate stooping and to save time in the operation, a new device was tested and proved successful in satisfactorily applying the material with a minimum of discomfort to the greenhouse employees pouring the carbon disulphide. The new piece of equipment consists of an ell-shaped wooden device made of 2 x 4's. The bottom of the ell is 5 feet long and the upright portion 3 feet in height. In the base of the ell, five holes are drilled 12 inches apart, the two end holes being 6 inches from either end of the piece. Lengths of 3/8-inch copper tubing are used as conducting tubes. The end of a tube is forced to the bottom of each hole and the remainder of the tube bent to follow along the top of the base and then to the top of the upright. Funnels are soldered to the upper end of each tube so that when the base of the ell is placed beneath a greenhouse bench, the required dosage for each hole can be poured in each tube on the upright and conducted to its proper place of application in the soil. Each tube has enough pitch to properly convey the liquid. When one series of treatments is completed, the device is moved forward 12 inches and the operation repeated. Men applying the fumigant are able to stand erect and ladle the material into the funnels conveniently and quickly. Ladles are used with a capacity of 21 cc, the correct dosage per hole.

There was a decided increase in the amount of inspection work accomplished in New Jersey during January. Inspection calls made numbered 354, an increase of about 15 percent over January 1933. Approximately half a million plants were certified for movement to nonregulated territory as compared with 341,000 certified in January of last year. There was also an increase of 50 percent in the number of plants certified for intradealer movement within the regulated zone. This total represents an increase of 100 percent over the total plants certified in December 1933. Considerable activity is noted in the rose industry. One establishment has received 26 carloads of roses. These will be certified, individually wrapped, and forwarded to chain stores throughout the country. Almost a million rose bushes are involved. One of the smaller rose dealers dug and freed from soil 20,000 roses. These were certified for shipment as a single order. Thousands of dahlia clumps were inspected during the month for movement into certified greenhouses for propagation. These clumps required very close inspection, since they were not root divisions. Rooted cuttings of dahlia, also requiring actual inspection, continue to move under certification. There appears to be an optimistic spirit among the New Jersey nursery industry, with a few outstanding exceptions in the metropolitan district in northeastern New Jersey, where trade seems to lag somewhat as compared with the remainder of the State.

Sectioned Japanese beetle traps were provided by the project for use in respective State plant pest exhibits at the New Jersey Agricultural Fair, held at Trenton from January 23 to 27, and the Pennsylvania Farm Show, held at Harrisburg from January 15 to 19. State employees from the White Horse district office assisted in assembling a large exhibit shown by the New Jersey Department of Agriculture. Collection of material involved the transportation of 18 truck loads of plant material and soil from the New Jersey pine barren region. The exhibit depicted a cranberry bog with characteristic surroundings of the pine barren habitat. Agents in charge of New Jersey suboffices attended the opening session of the Agricultural Fair. Everyone connected with the Harrisburg headquarters had an opportunity to visit the Pennsylvania Farm Show which is housed in a 10-acre building two blocks east of the headquarters office. The exhibit by the Pennsylvania Bureau of Plant Industry included Riker mounts of the Japanese beetle, showing its life history and damage. An enormous replica of the insect owned by the State Bureau also attracted considerable attention, as did the Japanese beetle trap with its attractive bait.

Brass soil samplers used to procure representative samples of poisoned soil for analysis are being remodeled preparatory to the soil-sampling work which will begin early in March if weather permits. The main portion of the present soil samplers consists of a 2-inch steel tube about 32 inches long. Each sampler will be cut in half and made into two samplers by attaching to the top of each halved tube a 2-inch to ½-inch reducer. A 15-inch length of ½-inch galvanized iron pipe will be screwed into the top of the reducer. A 4-way tree on the upper end of the ½-inch pipe will provide for a cross handle and a top cap for a plunger rod guide. The remodeled samplers will be of the same length as those now in use. Dismantling of the old-type samplers prior to sharpening has always involved considerable work. With the new type, it is only necessary to unscrew the larger tube from the reducing cap in order to clamp the portion to be sharpened to the tool rest of a bench grinder. In the past the necessity for sharpening the apparatus has often prevented an early morning start for the nursery where soil samples are to be collected. The double supply of the tools will permit sharpening of half of them while the remainder are in use.

An individual in Tunkhannock, Pa., evidently has his own ideas as to measures the Bureau should take in enforcing the Japanese beetle quarantine. When this private shipper was requested to submit an explanation for the mailing of an uncertified package containing a plant with soil, destined to Orlando, Fla., he replied stating that he was uninformed of the requirements at the time he mailed the plants and concluded with the statement "By the time I get the chores done, I don't have time to read even the Republican and New Age. You should have wrote me before I sent that plant, and besides you kept the plant too long because just as soon as we got it back we set it right in a pot here by the winder but it won't grow." The plant was intercepted at Jacksonville, Fla., and immediately ordered returned to the addresser.

Return to the consignor of a shipment of apples made from Herkimer, N.Y., to a California destination brought an inquiry from the Herkimer postmaster concerning the reason for California's refusal to admit the fruit. The Department's Miscellaneous Publication No. 80, "Summary of State and Territorial Plant Quarantines Affecting Interstate Shipments", permitted a prompt reply quoting California State Quarantine Order 3 on account of the oriental fruit moth, issued January 31, 1930. This State quarantine prohibits the movement into California from 25 States and the District of Columbia of all varieties, including flowering forms, of almond, apple, apricot, cherry, chokeberry, nectarine, peach, pear, plum, and quince trees, plants, or parts, including fresh fruit and used containers of the fruit.

Proposed revised instructions were prepared during January for the chemical treatment of nursery stock, sand, soil, earth, peat, compost, and manure in conformity with the Japanese beetle quarantine regulations. The treating manual was originally prepared at the request of the then Plant Quarantine and Control Administration by W. E. Fleming, entomologist, of the Japanese beetle laboratory, Bureau of Entomology, Moorestown, N.J.. Since the approval of the original instructions on April 16, 1929, seven supplements have been issued and additional chemical treatments have been authorized from time to time in the form of PQCA's. The revised manual will combine all these scattered instructions in a convenient logical form, and will exclude the treatments that have been rendered obsolete by improved fumigation and sterilization practices.

High-lights in the two recently released motion pictures on the Japanese beetle, "Life History, Damage and Spread" and "Methods of Control" are being combined in a single reel. This one-reel film will be used as a condensed, popular picture for exhibition in schools, clubs, and other organizations desiring a short educational film. The condensed scenario includes some 50 scenes, with about 40 explanatory titles. Its title will be, 'Confining the Japanese Beetle." The tentative scenario for the condensed picture was prepared by H. B. McClure, of the Office of Motion Pictures of the Department's Extension Service.

CWA workers employed at the Frankford Arsenal painted the interior of the Philadelphia district office, located in building No. 22 on the Arsenal grounds.

Six days were required before the furniture could be moved back in place, the supplies replaced on the shelves, and the wall maps and Riker mounts replaced on the redecorated walls. The 15 mechanical beetle separators, used in inspecting beans and stored over winter at the Arsenal, will also be painted by the CWA employees. An employee of the Pennsylvania Bureau of Plant Industry, temporarily released from seed inspection work, was assigned to work under the supervision of the Philadelphia Japanese beetle quarantine office during January and February.

Ability to accumulate annual leave, as authorized in Administrative Memorandum No. 153, permitted a number of inspectors connected with the Philadelphia district office to take the remainder of their annual leave for 1933 in January and February of this year. Seasonal activities in the Philadelphia section required the services of the limited number of employees stationed there for a much longer period than is usually necessary during November and December. The new ruling concerning annual leave permitted continuance of the work without a year-end leave-taking clean-up.

Complete histories of each nursery plot treated with lead arsenate are available in "leading books" kept by the treating division. Information contained in the forms executed in the field by inspectors supervising treatments have been transferred to the treating books. Prints of block maps describing the boundaries of the plots are inserted in the books after checking with the field records. Pertinent information also is being added preparatory to spring soil sampling and next season's lead arsenate applications.

Gypsy Moth and Brown-Tail Moth Quarantine Enforcement

All spare time of inspectors not occupied in actual inspection and certification activities has been utilized in infestation surveys in the vicinity of nurseries and tourist camps in their respective districts. In the Middleboro, Mass., district, inspection of 3 nurseries disclosed 35 egg clusters on the nursery stock in one nursery, with 5,565 egg clusters on adjacent premises from 10 to 600 feet from the nursery stock. Egg clusters estimated at 1,750 were found in the woods surrounding another nursery. At a third establishment, 190 egg clusters were observed on a large tree near the edge of the premises. Of 4 tourist camps surveyed in this district, 3 were found to be lightly infested, and 1 free from infestation. Many gypsy moth egg clusters were found in a nursery in the Framingham, Mass., area. Grounds of one tourist camp in the Westfield, Mass., district were found to harbor an infestation. Many tourist camp grounds were found to be infested in the Greenfield, Mass., area. Oak growth at 1 camp was found more heavily infested than any other tree species. Several egg clusters were found on camp buildings. This year's inspection in the Greenfield area shows an increase in gypsy moth egg clusters in many of the camp grounds as compared with last year. Camp grounds were also found infested farther west than last year. Plenty of egg clusters of the tussock moth and tent caterpillar were found in several nurseries in the Barre, Vt., area, but no evidences of gypsy moth infestation in the immediate vicinity of these establishments were observed. In the Bath, Maine, section, inspection of 23 tourist camps disclosed infestations in 8 of them. Two camps were infested with the brown-tail moth. The heaviest infestation observed consisted of 161 gypsy moth egg clusters. Since the snow was 2 feet deep when the latter inspection was made, the inspector probably missed a number of clusters in low situations. Last year a less extensive inspection of tourist camps in the same area showed only 1 camp to be infested. Whenever infestations are discovered on nursery properties or on or near tourist grounds, the condition is called to the attention of the owner of the premises. Advices also are given as to the methods the property owner should employ in ridding his grounds of the egg clusters, thereby eliminating the possibility of spread of the gypsy moth from that source to any section of the country, whether regulated or nonregulated.

Evidences of business recovery have been observed by gypsy moth inspectors in a number of instances throughout the New England States. In the Lebanon, N.H., district, a handle manufacturer purchased during January several truck- and carloads of ash logs. Prior to 1932, this firm annually purchased large amounts of ash from the Lebanon district. Due to business conditions, the firm has not solicited logs in this section during the past two winters. Resumption of purchases probably has been stimulated by the demands for their products by CCC, CWA, and similar projects. A large amount of cut laurel was shipped under certification from the New London, Conn., district. Inspection was made of 20,192 pounds, an unusual amount to be moved after the Christmas holidays. Ultimate destinations of this product are probably the various flower markets, where the laurel will be used for floral designs and decorations. Oregon huckleberry, cut heather, acacia, and bittersweet are also in good demand and are moving under permit from the Boston market in unusual amounts. Some of the acacia is greenhouse grown in the Cape Cod area. Nurseries in the Manchester, Conn., district are busily engaged in grading and storing nursery stock preparatory to the spring rush. Some increase in orders for spring delivery is reported. Shipments from this district to southern destinations should now be en route, but recent subzero weather has delayed their movement. Stock now prepared for shipment appears to be keeping well despite the weather and is believed to be in better condition now than in the Januarys of the past few years.

Observations reported by the gypsy moth inspector stationed at Lebanon, N.H., indicate that the recent extremely severe winter weather may prove effective in materially reducing gypsy moth infestation in that section. Temperatures ranging from -30° to -50° F. have been recorded, in some instances when there has been little snow on the ground. In sections where stone walls are scarce, it is belived that gypsy moth infestations should be practically eliminated. According to published data, temperatures from -20° to -25° F. usually are sufficient to prevent hatching of overwintering eggs deposited in positions exposed to these severe climatic conditions. If snow, ice, or other material protects the clusters, they are not killed even by the low temperatures mentioned. In the White River Valley, where farm boundaries are marked principally with brush or wire, it is now difficult to find infestations. In woodland areas where stone walls are used as line fences, even the severest winter apparently has little effect on the succeeding summer's moth population. During last year's defoliation survey, the reporting inspector observed the heaviest infestation in his district to be in the vicinity of a stone quarry, where immense quantities of discarded stone were heaped on a woodland slope. These stone piles evidently provide desirable overwintering quarters for the moths, serving as protection for the clusters from the egg-laying season until the caterpillars hatch in May.

Merger of the gypsy moth and Japanese beetle quarantine enforcement projects in the New England States has resulted in a readjustment in the set-up of the supervisory organization of the moth work. F. W. Graves, senior administrative assistant, has been assigned to the Boston office, from which he will operate as supervisor of all gypsy moth inspectors except those operating in the Boston district. R. S. Clifton, district supervisor of the Japanese beetle quarantine activities in the New England States outside of Connecticut, has been given general supervision of the moth inspection work in the Boston metropolitan area. Personnel of both projects in Boston are quartered in a jointly occupied office on the fourth floor of the Custom House. Such Japanese beetle inspection work as may be performed by the gypsy moth inspectors, either as joint certification under quarantines 45 and 48 or as exclusive Japanese beetle certification, will continue under the direction of J. P. Johnson, district supervisor, in Connecticut, and of Mr. Clifton throughout the remainder of the New England States. Two clerks previously assigned to the moth quarantine enforcement work at Greenfield, Mass., were transferred to the combined headquarters at Harrisburg, Pa., on January 12 and 16.

Beavers and trout were about the only items included in the State of Maine Development Commission's exhibit at the National Motor Boat Show which did not require inspection and certification before being shipped from the gypsy moth and brown-tail moth regulated area. The articles shipped comprised cut spruce, birch, and fir balsam trees, birch bark, old stumps and logs, stones, and rustic furniture made from birch bark and split cedar. Inspection of the material was made in a warm loft at Lewiston, where the snow and ice were removed and a close inspection made of each individual article. As finally placed in the Grand Central Palace, New York City, the Maine exhibit occupied a space about 75 feet long and 15 feet wide across one side of the balcony. The exhibit represented a natural woodland scene, with a ground cover of leaf mold, moss, and ground pine. A waterfall tumbled into a pool containing about two dozen trout. From the pool a stream passed a model camping site with tents, rustic table, and stools. The stream emptied into another pool containing two beavers. The background of the exhibit was made of spruce, and black and white birch trees 8 to 10 feet tall. Several representatives of the Maine Development Commission were in attendance to distribute literature describing the vacation advantages of Maine. It was estimated that 250,000 persons visited this exhibit during the period the motor boat show was in progress from January 22 to 27.

Severe weather conditions were responsible for a decrease in quantity of material inspected throughout most all districts in the lightly and heavily infested zones. Record lows of from -42° to -48° F. at Plymouth, N.H., rendered effective work almost impossible. On a number of successive days the thermometer registered from 0 to -30° F. The ground has been covered with snow since November 1, there being about 3 feet of snow on the ground at the end of January. Snow is piled high on both sides of the road and the highways are covered with ice. The snow is too deep in some parts of Maine to inspect nurseries or tourist camps for gypsy moth egg clusters. Snow and ice on the Maine highways make driving very hazardous. The inspector stationed at Rutland, Vt., reports that during his 9½ years in that district he has never seen such prolonged severe weather. He describes the highways as "just one glare of ice." In the Milford, N.H., district snow and ice are so thickly packed around the trunks of evergreen trees in nurseries that their examination for gypsy moth infestation is impossible.

Granite from Frankfort, Maine, is being inspected for shipment to New York for use in the New York Health Building. Carloads of certified stone are moving from Burlington, Mass., to Washington, D.C., to be used in the erection of the Archives Building. Of the latter material, there have been 150 carloads shipped. While it is practically all newly quarried stone, a tremendous amount of second-hand lumber is used for crating and bracing, all of which requires inspection for egg clusters. After the contents of the cars are thoroughly braced with inspected lumber, excelsior is tightly packed between the stones.

Rubble, or rough, irregular pieces of broken stone, is now being shipped just as quarried from the Concord, N.H., district directly to New York City, where it is being cut by the unemployed. Previous shipments of this material have been made but some cutting of the stones has been performed at the quarry before shipment. Recent shipments, however, have been of the stones just as they have been brought out of the quarry. The rough character of the material and the fact that it is not used in stonework requiring a highly finished appearance make possible its handling by inexpert, unemployed stonecutters.

Guides furnished by a lumber company piloted gypsy moth inspectors in their examination of large quantities of cordwood at five lumber camps in extensive Vermont woodland tracts. This wood was cut last summer, and is now being shipped to New York State as pulpwood. A total of 18,800 cords of wood was inspected and found to be free from gypsy moth infestation.

All district gypsy moth inspectors have been furnished with BPQ officer's badges from the Harrisburg headquarters. Arrangements are also under way for the early uniforming of the inspectors operating in the 25 districts into which the gypsy moth and brown-tail moth regulated territories are divided.

Satin Moth Quarantine

Through an individual's communication appearing in the "Letters to the Editor" column of a Boston newspaper and observed by a gypsy moth inspector, a perennial violator of the satin moth quarantine was discovered and his attention directed to the restrictions which prohibit the movement from the restricted territory of native-grown poplar or willow trees or parts thereof capable of propagation. The letter in question boasted of the "Florida climate" of the Cape Cod region. As proof of the superior weather on the Cape Cod peninsula, the individual stated that on four occasions from October 30 to January 1 he has cut pussy willow twigs on his property. On December 15 he cut a large bunch and took the cuttings to Miami Beach. This he said was nothing unusual, since his family has been doing this for the past 5 years or more. Investigation by the inspector who observed the letter showed no moth infestation on the tree from which the willow cuttings were taken nor were any of the surrounding trees infested, although this locality has been heavily infested for the past few years. Explanation for this freedom from infestation is probably in the fact that the caretaker on the estate creosotes any egg clusters he finds. When the matter was called to the attention of the writer of the letter, he stated that he was unaware of the prohibitive restrictions on the movement of willows from the satin moth quarantined area. Assurances were given that no further pussy willow cuttings would be illegally transported in the future. Although the regulations of the gypsy moth and brown-tail moth quarantine also were violated, the prohibitive clause of the satin moth regulation supersedes the permissive inspection under Quarantine 45.

Corn Borer Certification

Numerous revisions of existing State quarantine orders on account of the European corn borer and the promulgation of several original orders have occurred since the preparation of revised BPQ-346 on March 16, 1933. The present State quarantine orders were reviewed during January and information contained in the quarantines compiled in the form of a 6-page mimeographed shipper's guide showing requirements for shipments consigned to States having quarantines on account of the borer. In the interests of uniformity, the States of Idaho, Kansas, Missouri, and Illinois revised their quarantine orders and proclamations. Indiana also issued a quarantine largely paralleling those of the four States named. Michigan and Ohio, States infested with the 1-generation borer, have issued quarantines against the States infested with the 2-generation strain of the insect. Wisconsin has revised its notice of quarantine against the movement of products from the 2-generation area. Nevada and Oregon now administratively accept Federal certification of quarantined articles other than corn, broomcorn, sorghum, and Sudan grass. Utah has revised its embargo on all products. Of the wholly uninfested States, all except Alabama, Delaware, Minnesota, Montana, North Carolina, and North Dakota have promulgated quarantines, issued proclamations, or announced rules restricting the movement into their States from corn borer infested States of articles included in the revoked Federal quarantine. When certified by a Federal inspector, quarantined products other than corn and other crops which cannot be satisfactorily inspected for the borer are admitted into the States of Arizona, California, Colorado, Georgia, Louisiana, Nevada, and Oregon.

Since the closing of the western district office of the European corn borer at Toledo, all corn borer records have been stored in the warehouse at New Cumberland, Pa. In the rush of moving, the records became considerably confused. During a portion of January, C. O. Larrabee and O. P. Norris, formerly connected with the Toledo headquarters and now engaged in corn borer certification work in the Michigan and West Virginia-southern Ohio districts, respectively, were assigned to New Cumberland for the purpose of sorting over, indexing, and systematizing the records in the old files. This particularly was necessary with respect to the records of the 1927 clean-up campaign, details of which are still occasionally required.

When rubber-stamped certificates are used to jointly certify plant material coming under the restrictions of both the Federal Japanese beetle quarantine and the European corn borer quarantine order of the State of destination, the letters "ECB" are written after the stamped numeral 48, the latter representing the Japanese beetle quarantine. These letters identify to plant quarantine officials at destination that Federal certification has been granted to meet both Japanese beetle and corn borer requirements.

MEXICAN FRUIT FLY

Trapping operations were seriously handicapped during the month of January by continued rains. However, 5,307 traps were operated in 479 selected groves throughout the Valley, and resulted in the taking of 23 *ludens*, 25 "X" species, 9 *fraterculus*, 85 *serpentina*, 17 *pallens*, and 24 *T. curvicauda*. *Ludens* were taken the length of the Valley. Of particular interest was the taking of 2 adult *ludens* in Willacy County. These are the first specimens of Mexican fruit flies taken in this county since the quarantine was inaugurated in 1927. Willacy County was included in the quarantined area since citrus growing was continuous with that in the Lower Valley.

Host fruits in the Valley of the various species of *Anastrepha* other than *ludens* and *pallens* have not yet been determined. It may be that, like *pallens*, they are ovipositing in the fruit of some native shrub and that their occurrence in the citrus groves is accidental.

No larvae of any of the species were found in the inspection made of the fruit remaining in the groves.

The small power sprayer purchased by the State Department was put in operation during the first part of the month and did very excellent work; 13 groves containing 4,668 trees were sprayed. The trees were given a complete coverage which required an average of about a gallon of the spray per tree. Weather conditions were such that no spraying could be done after the 15th of the month.

Trapping operations in Matamoros resulted in the taking of 5 adult *ludens*. These premises were immediately sprayed following the taking of the adults. Fruit importations from the southern part of Mexico were very light, with a corresponding decrease in the number of larvae recovered; however, larvae were taken from imported oranges, guavas, and mameys. Those taken from mameys were, in all probability, *Anastrepha serpentina*. Traps were operated at Soliseno, Rio Rico, and Reynosa on the Mexican side of the river during the month with negative results. During the latter part of the month the American inspector stationed in Matamoros was transferred to Nuevo Laredo for a few days. The operation of 95 traps at that place resulted in the taking of an adult *Anastrepha ludens*. This was not unexpected inasmuch as Nuevo Laredo is a larger town than Matamoros and receives considerably more fruit from the same localities as that shipped to Matamoros. During the week in which the traps were operated, only 2 days of favorable trapping weather were experienced, which probably accounts for the low catch of flies.

Fruit shipments were brisk throughout the month, a total of approximately 984 equivalent carloads being shipped. This brought the total shipments to the end of the month to approximately 2,551 carloads, which was between 65 and 70 percent of this season's production.

Dr. A. Dampf, Chief Entomologist of the Mexican Department of Agriculture, spent several days in the Valley studying the eradication and quarantine methods used on this project. Doctor Dampf was in the States primarily for the purpose of attending the meeting of the Texas Entomological Society.

PINK BOLLWORM

Field clean-up, which was begun in the Big Bend area of Texas on November 6, was completed on January 15. In Brewster County 130 acres were cleaned, and 3,305 in Presidio County, or a total of 3,435 acres in the two counties combined. This includes all of the acreage in the Big Bend except a small amount in the extreme upper part of Presidio County. After the fields were cleaned a house-to-house canvass was made, and all material around storage places, etc., which was likely to contain pink bollworms, was destroyed. Farmers throughout the area were well pleased with the work and gave excellent cooperation. They all stated that field cleaning year before last so reduced the infestation that they were able to make a much better crop last season. Field clean-up on the Mexican side of the river is still going forward, but at this time we do not have any available information showing the acreage which has been cleaned and that remaining to be cleaned.

Field inspections were continued in the Western Extension counties of Texas and New Mexico throughout the month without finding any additional infested fields. Due to especially favorable weather the farmers picked the cotton much cleaner this season than in previous ones, so that at the end of the month there was very little material remaining in the fields suitable for inspection purposes. Therefore, at the close of the month the inspectors were called into San Antonio to begin laboratory inspection of green bolls. Laboratory inspection of material collected in southern Georgia and northern Florida has been under way during the entire month at the Lake City laboratory. Some of the material was from counties in the regulated area and the remainder from counties just outside, the results all being negative.

The release of the Salt River Valley of Arizona from the regulated area was mentioned in the last News Letter. The field office at Phoenix has been abandoned, and all equipment moved to the Tucson office. During the month several inspectors have devoted their time to field inspection for both the pink bollworm and Thurberia weevil, without finding any specimens of either. There is still a good deal of material available, and the inspections will be continued until the fields are plowed under.

The eradication of wild cotton in southern Florida has gone forward satisfactorily. On the west coast one party began at Naples and is working northward. Another party began work at Hudson, in Pasco County, which is the farthest north wild cotton has been found, and is working southward. During this recleaning of the area the inspectors are paying particular attention to out-of-the-way places, so that no wild cotton will be overlooked. It has been estimated that these two parties would meet by the end of the coming month, after which all of the area from Naples northward will have again been cleaned of wild cotton.

Toward the close of the month an active program of eradication was again begun in the Cape Sable area, and also the recleaning of Key Largo. Some 60 laborers are being employed at Cape Sable, and a smaller number on Key Largo. It is the intention to increase the number of laborers at Cape Sable to about 75, as there is considerable cotton to be removed. At the end of the month 39 colonies, covering some 245 acres, had been recleaned, from which 729 mature, 196,301 seedling, and 8,563 sprout plants had been removed. A considerable number of green bolls were inspected as the cotton was destroyed, and in one colony in Lee County about a 16 percent infestation of the pink bollworm was discovered. All of this cotton has since been destroyed. In addition to the above, 4 colonies, covering 17 acres, were cleaned for the first time, from which 1,335 mature and 2,825 seedling plants were removed. In Dade County an inspector has been engaged in the eradication of dooryard cotton plants. The exact location of these plants had previously been reported by inspectors of the Florida Plant Board while engaged in grove inspection. A total of 45 mature and 324 seedling plants were removed from 15 different locations. Some of the bolls from this cotton were examined without finding any specimens of the pink bollworm.

Weekly examination and destruction of the blooms from the plats of cotton at Chapman Field has been carried on. During the month 868 blooms and 20 bolls were examined, with negative results.

Ginning has practically been completed throughout the regulated areas. As each gin completes the season the plant and premises are cleaned up, and reports indicate that a much better job is being done this season than in previous ones. This is perhaps due in a large measure to the fact that various delegations of ginners, farmers, and other interested persons visited the Big Bend during the season and saw for themselves the damage being done by the pink bollworm. After returning to their communities they told others of this damage, and this stimulated interest in complying with all of our regulations.

PREVENTING SPREAD OF MOTHS

Scouting in the more elevated sections of Vermont continued with the full force assigned there until well along in January, in spite of decidedly adverse weather conditions. The winter thus far has quite fully come up to the standards of an "old-fashioned winter", with much subzero temperature and heavy snowfall. There have been days when the thermometer did not rise above zero all day. Under such extremes woodland scouting is arduous, as men cannot dress warmly enough to be comfortable, and besides there is considerable chance that their fingers, toes, and faces will be frostbitten. This is especially so if the cold is accompanied by winds of high velocity, as was the case one day the latter part of January. Beginning about the middle of that month, some of the men who were accepted for employment from Massachusetts and Connecticut were transferred back to their own States after having worked in Vermont since finishing at the training schools. They have been assigned to towns in the Connecticut Valley. After the completion of the training periods many of the men from Massachusetts and Connecticut were sent to Vermont to work, as there is a much larger area of mountainous country in that State than in the other two and it was desired to get as many of the higher locations done as possible before excessive snowfall forced a discontinuance. In those highland sections snow does not melt very much during the winter but keeps increasing in depth until there are several feet of it on the ground.

In northern Vermont the snow has been gradually increasing in depth until now there are 3 or 4 feet of it in many places. Men accepted from Vermont have been working in that State and these are being moved to towns in the region of Lake Champlain and in the Connecticut Valley.

At the gypsy moth infestation in Pennsylvania, scouting to determine the farthermost limits to which the insect had spread had to be discontinued last spring before those limits were determined, as hatching of the egg clusters and the development of the young larvae had advanced to such an extent that it was necessary to begin spraying in the more heavily infested sections. When scouting was resumed after the middle of last summer, the entire force was placed in the worst parts of the infested area where there was the most pressing need for control work. In such sections tree-by-tree examination was made and many egg clusters were destroyed. Certain portions of the known infested area are hard to work in during severe winter weather because of the rough nature of the country and the poor roads. For these reasons it was desired to have as much done as possible before it became necessary to move the men to more favorable working localities. Toward the latter part of January, after a large amount of work had been accomplished in the central infested area, about 275 men were moved to townships outside of the area known to be infested at the close of the scouting season last year. Careful scouting will be performed town by town and it is hoped that the extreme limits of the infested area will be determined accurately before it becomes necessary to discontinue this type of work.

Scattered throughout the area in New England in which gypsy moth scouting is being performed are many old apple trees which have received no cultural attention for years, if ever, and because of this are tangled masses of dead wood, broken branches, and sprouts. Many of the trees are also full of cavities. Such neglected trees are found along stone walls bordering roads or property lines, in back pastures, or abandoned farms. Their condition makes the proper examination of them extremely difficult, particularly if they contain cavities, for if there are gypsy moth infestations in the immediate vicinity, egg clusters are very apt to be found inside of the cavities and out of reach unless the trees are cut down and split open. Just recently an old apple tree with a large cavity was found at an infestation in western Massachusetts. This cavity had egg clusters which could not be reached without splitting. The tree was cut, split open, and 14 egg clusters found. Because of the difficulty of examining the inside of such cavities even with the aid of the small scouting mirrors, there is a possibility that egg clusters deep down inside will not be discovered and thus remain to build up dangerous infestations. In Massachusetts under C.W.A. authorization, a campaign for the control of the apple maggot and other insects and of various important apple diseases has been undertaken. In connection with this work, crews have been cutting worthless apple trees, wild cherries, and cedars in the vicinity of orchards. The removal of such trees, particularly the apples, will be of some benefit in gypsy moth control for it will eliminate a few of the favorable sources of infestation which cannot be scouted satisfactorily except with considerable difficulty.

Woodland scouting during the winter months cannot be performed unless the men are provided with snowshoes, for it is next to impossible to make any progress if the scouts are forced to flounder around in deep snow. Some years snowfall is so light that shoes are not necessary, but this year there have been so many storms that snow lies deep in the woods and all of the men have been using the shoes for some time. About twelve hundred pairs of snowshoes are in use now. In spite of the fact that a majority of the men have never walked with snowshoes before they put them on for scouting, they do not have much trouble in learning how to use them. Because of heavy early falls of snow, shoes were put in use early this winter and many of the pairs have seen hard service. The type of country in which work has been performed has been severe on the shoes, for there has been much climbing over ledges and rocks. Alternate freezings and thawings have coated the snow with a hard crust and there is much ice in spots. These conditions have worn the varnish from the webbing of the shoes, and when once this is gone the webbing soaks up water and stretches, making the shoes useless. To avoid this trouble the shoes have to be revarnished. For a few pairs this can be done with a brush, but where many pairs are to be treated, dipping is much more satisfactory. At the end of the season all snowshoes are returned to the storehouse where they are gone over, revarnished when necessary, and put in good condition for the next season. They are stored in a cool, dry place, being hung from rods out of reach of mice, for if exposed to their attacks those rodents will eat all of the webbing they can reach.

All gypsy moth egg clusters found in scouting are destroyed by being painted with creosote. If such infestations are in small growth all of the egg clusters can be reached without much difficulty, but where trees are larger there are clusters which cannot be treated from the ground with hand creosote brushes, and there are some which are too far out on the small limbs to be reached by climbing. For the treating of out-of-reach egg clusters, pole brushes are used. These are small, flat brushes set rigidly at an obtuse angle on the ends of long, light poles. Bamboo is the only material light enough and at the same time strong enough to be satisfactory. Somewhat below each brush a light hook is fastened to the pole so that it may be hung from the trees when not in use or when the user needs both hands in climbing. The bamboo used has to be of high grade to stand up well. The proper quality can be obtained only through factories that make fishing rods, as these are about the only firms that import bamboo of the required quality, length, and slenderness. This year it was not easy to get sufficient poles for the needs of the scouting force. Only limited amounts of bamboo poles are imported each year, as the factories do not order many more than they expect to use. They do not carry in stock much of an extra supply. With the expansion of the amount of control work this year, there was an increased need for pole brushes to supply not only the regular scouting force but also men at C.C.C. camps in several States who are working on gypsy moth control. After some delay enough poles were obtained to make about 700 brushes. When purchased the bamboo poles are about 24 feet long, and taper gradually from about an inch and a half diameter at the base to a very slender tip. This tip is too small for the attachment of the brush, and several feet of the end of each are cut off. The finished pole is commonly 18 or 19 feet long.

At the Civilian Conservation Corps Camps situated west of the Connecticut River in the band of towns between that river and the eastern border of the barrier zone, gypsy moth control work has been continued by a part of the personnel in the three States of Vermont, Massachusetts, and Connecticut. While no camp has been able to assign to gypsy moth work the full number of men it was hoped could be used, there has been a gradual week-by-week increase in the number thus assigned, and this increase has been reflected in the record of the amount of scouting accomplished. At one period toward the latter part of January there was a daily average of 621 men from the camps working on control. In the towns immediately in the vicinity of the camp sites, the men have scouted woodland areas, trees along roadsides, and those scattered in open country, destroying all egg clusters found. Some especially bad areas have been cleaned of worthless trees and brush which will not only facilitate gypsy moth control but will improve general forest conditions. Some rather heavy infestations have been found by the men working from these camps, and the amount of scouting which they have been able to accomplish has been of considerable assistance in the general control problem.

One of the projects authorized under the Civil Works Administration was the extermination of the brown-tail moth in Maine, New Hampshire, Vermont, and Massachusetts, the four States in which this insect is known to be present. This extermination project lent itself admirably to the general intent of the C.W.A. program of relief for unemployed, for a large number of men could be put to work almost at once on an activity which is distinctly worth while and which will be of great benefit to the States themselves and to the people who live in them and own property there. From late fall until early spring, the small brown-tail moth larvae hibernate in small, tightly woven webs composed of silk and leaves. These webs are formed on the ends of the twigs and the larvae are in small pockets where they are well protected from most of the adversities of the weather. The most practical method of control is to cut off the webs any time during the winter and burn them. The insect feeds exclusively on the leaves of deciduous trees, and as such trees are bare of foliage during the winter, the webs can be located without much difficulty. Of course the cutting of the webs has to be done with care, as they may be so small that they may be overlooked, and the removal of all of them from large trees is considerable of a task as some may be at the extreme tips of the branches. This project was initiated in December, but it was not possible to get it under way in all of the four States until along in January. In Vermont, with only a few towns along the Connecticut River infested, the number of winter webs collected has not been large; but in Maine and New Hampshire, where there are numerous towns heavily infested, very many webs have been cut and burned by the crews. By the latter part of January nearly fourteen million webs had been destroyed in the four States.